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(54) Title: EDIBLE SPREAD

(57) Abstract: This invention relates to a food product, in particular an edible spread in the form of an oil-in-water emulsion comprising: from 4 % to 40 % by weight of a primary flavouring agent; from 7 % to 25 % by weight of a water-soluble vegetable fibre; from 1 % to 5 % by weight of milk protein or a source thereof; from 0.1 % to 3 % by weight of a stabiliser; and from 20 % to 60 % by weight of water.

EDIBLE SPREAD

This invention relates to a food product, in particular an edible spread.

An acceptable edible spread should have a number of characteristics. It should be capable of being spread at domestic refrigerator temperatures and at room temperature without releasing oil or moisture or breaking apart. It should release its flavour in the mouth but should also retain a smooth structure when spread. The spread must also be stable at room temperature and have an adequate shelf life. All of these characteristics have not so far been achieved in edible spreads, in particular sweetened oil-in-water emulsion spreads.

It is therefore an object of the invention to provide an improved edible spread which has good spread characteristics and organoleptic properties.

According to the invention there is provided an edible spread in the form of an oil-in-water emulsion comprising:

from 4% to 40% by weight of a primary flavouring agent;

from 7% to 25% by weight of a water-soluble vegetable fibre;

from 1% to 5% by weight of milk protein or a source thereof;

from 0.1% to 3% by weight of a stabiliser; and

from 20% to 60% by weight of water.

The primary flavouring agent may be any suitable flavouring agent and is preferably selected from chocolate, caramel, nuts and fruit. In a particularly preferred embodiment of the invention, the primary flavouring agent comprises chocolate, such as milk chocolate, dark (plain) chocolate, white chocolate or hazelnut chocolate. The primary flavouring agent is preferably present in an amount of from 10% to 30%, more preferably from 15% to 28%, especially approximately 25% by weight of the spread.

In a particularly preferred embodiment of the invention, the water-soluble vegetable fibre comprises inulin. The water-soluble vegetable fibre is preferably present in an amount of from 10% to 15%, especially approximately 12% by weight of the spread.

The milk protein preferably comprises a non-fermented milk protein, such as, for example, skim milk powder, whey powder, whey protein concentrate, caseinates, soy protein and mixtures thereof. Skim milk powder is particularly preferred. The milk protein or source thereof is preferably present in an amount of from 1.5%

to 3.5%, especially approximately 2% by weight of the spread.

The stabiliser preferably comprises a stabiliser that will gel in the presence of milk protein. The stabiliser may be any suitable stabiliser and is preferably selected from gelatine, alginate, carrageenan, pectin, agar agar and mixtures thereof. The stabiliser is preferably present in an amount of from 0.5% to 2.5%, especially approximately 1% by weight of the spread.

The spread of the invention comprises water in an amount of from 20% to 60%, preferably from 40% to 55%, especially approximately 50% by weight of the spread.

The spread may also include one or more sweetening agents in an amount up to 20% by weight of the spread, depending on the sweetening agent(s). Suitable sweetening agents include sugar, corn syrup, fructose, glucose, and artificial sweeteners, such as aspartame.

The spread may include further optional ingredients, such as one or more secondary flavouring agents, colouring agents, acidity regulators (e.g. lactic acid), preservatives (e.g. potassium sorbate) and the like.

The spread of the invention may be formed by heating the water to a temperature in the region of 80°C-90°C. The remaining ingredients are added to the hot water

under high shear agitation and dissolved therein and the mixture is pasteurised for at least 15 seconds, conveniently 30-60 seconds at about 72°C. The oil-in-water emulsion thus formed is then rapidly cooled, preferably using a scraped surface heat exchanger, from a temperature in the range of 40°C-80°C, preferably 50°C-70°C, to a temperature in the range of 2°C-25°C, preferably 5°C-15°C, over a period ranging from one second to five minutes, preferably ranging from 1 to 5 seconds.

The invention will be more clearly understood from the following description thereof given by way of example only.

In the following Examples, the water was heated to 85°C and the remaining ingredients were added thereto under high shear agitation and were dissolved in the water. The resulting mixture was pasteurised for approximately 30 seconds at about 72°C. The oil-in-water emulsion formed was rapidly cooled over a period of 1-5 seconds from a temperature of about 65°C to a temperature of about 10°C, by passing it through a scraped surface heat exchanger. All percentages are by weight of the spread.

EXAMPLE 1

Ingredients	%
Water	49.943
Skim milk powder	2.0
Milk Chocolate	25.0
Inulin	12.0
Sugar	7.5
Cocoa powder	2.0
Gelatine	1.0
Potassium sorbate	0.25
Lactic acid	0.3
Flavouring (Firmenech 504.867/T)	0.007

Example No.		2	3	4	5	6	7	8	9
Water	(%)	52.342	49.774	55.22	46.1	35.6	45.88	31.7	28.3
Butter	(%)	-	-	-	-	3	-	4	-
Skimmed Milk Powder	(%)	2.2	2.0	1.5	2.0	3	2.5	2	2
Cream Powder	(%)	-	-	-	6.0	1	-	-	4
Milk Chocolate	(%)	23.0	26.0	15.0	-	-	-	-	-
White Chocolate	(%)	-	-	-	21.0	-	-	-	-
Dark Chocolate	(%)	-	-	-	-	-	28	-	-
Hazelnut paste	(%)	-	-	10.0	-	-	-	-	-
Inulin	(%)	13.5	11.0	10.0	14.5	14.0	13	16	17
Caramel	(%)	-	-	-	-	40.0	-	-	-
Sugar	(%)	7.0	8.0	7.5	8.5	2.0	7	10	12
Cocoa Powder	(%)	1.0	2.0	-	-	-	2.5	-	-
Sodium Alginate	(%)	0.4	-	-	-	-	0.3	-	-
Pectin	(%)	-	0.7	-	-	-	0.2	0.9	0.4
Carrageenan	(%)	-	-	0.3	-	-	-	-	-
Gelatine	(%)	-	-	-	1.2	1.0	-	-	0.7
Potassium Sorbate	(%)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Strawberry puree	(%)	-	-	-	-	-	-	35	-
Raspberry puree	(%)	-	-	-	-	-	-	-	35
Lactic Acid	(%)	0.35	0.32	0.27	0.4	0.2	0.39		
Citric Acid	(%)							0.2	0.4
Flavouring	(%)	0.008 Danisco 25273	0.006 Danisco 25273	0.01 Danisco 3433	0.1 Danisco 3433	-	0.03 Firmenech 504.867/T	-	-

The above Examples yielded smooth stable spreads with excellent melt in the mouth properties at 30°C, which were spreadable from the refrigerator and melted to a liquid when heated.

The invention is not limited to the embodiments and examples described herein which may be modified or varied without departing from the scope of the invention.

CLAIMS:

1. An edible spread in the form of an oil-in-water emulsion comprising:

from 4% to 40% by weight of a primary flavouring agent;

from 7% to 25% by weight of a water-soluble vegetable fibre;

from 1% to 5% by weight of milk protein or a source thereof;

from 0.1% to 3% by weight of a stabiliser; and

from 20% to 60% by weight of water.

2. An edible spread according to claim 1, wherein the primary flavouring agent is selected from chocolate, caramel, nuts and fruit or any combination thereof.

3. An edible spread according to claim 2, wherein the primary flavouring agent comprises chocolate.

4. An edible spread according to any preceding claim, wherein the primary flavouring agent is present in an amount of from 10% to 30%, preferably 15% to 28%, and more preferably approximately 25%, by weight of the spread.

5. An edible spread according to any preceding claim, wherein the water-soluble vegetable fibre comprises inulin.

6. An edible spread according to any preceding claim, wherein the water-soluble vegetable fibre is present in an amount of from 10% to 15%, preferably approximately 12%, by weight of the spread.

7. An edible spread according to any preceding claim, wherein the milk protein comprises a non-fermented milk protein.

8. An edible spread according to claim 7, wherein the non-fermented milk protein is selected from skim milk powder, whey powder, whey protein concentrate, caseinates, soy protein and mixtures thereof.

9. An edible spread according to any preceding claim, wherein the milk protein or source thereof is present in an amount of from 1.5% to 3.5%, preferably approximately 2%, by weight of the spread.

10. An edible spread according to any preceding claim, wherein the stabiliser comprises a stabiliser that will gel in the presence of milk protein.

11. An edible spread according to claim 10, wherein the stabiliser is selected from gelatine, alginate, carrageenan, pectin, agar agar and mixtures thereof.

12. An edible spread according to any preceding claim, wherein the stabiliser is present in an amount of from 0.5% to 2.5%, preferably approximately 1%, by weight of the spread.

13. An edible spread according to any preceding claim, additionally comprising a sweetening agent in an amount of up to 20% by weight of the spread, the sweetening agent preferably being selected from sugar, corn syrup, fructose, glucose and artificial sweeteners or any combination thereof.

14. A process for preparing an edible spread according to any preceding claim, which comprises heating the water to a temperature in the range of from 80°C to 90°C and dissolving the remaining ingredients therein, thereby forming an oil-in-water emulsion.

15. A process according to claim 14, wherein the oil-in-water emulsion formed is rapidly cooled to a temperature in the range of from 2°C to 25°C, preferably 5°C to 15°C.

16. A process according to claim 14 or 15, wherein the oil-in-water emulsion is pasteurised prior to cooling.

INTERNATIONAL SEARCH REPORT

Int nal Application No
PCT/IE 02/00066

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A23L1/0532 A23L1/09 A23G3/00 A23D7/00 A23D7/015

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A23L A23D A23G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ, FSTA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 509 707 A (PETRELLA LTD) 21 October 1992 (1992-10-21) page 2, line 58 -page 3, line 7; claims 1,2,5,8-10,16-20; examples page 3, line 32 - line 33 page 3, line 37 - line 47	1-16
X	EP 0 605 217 A (GEN FOODS INC) 6 July 1994 (1994-07-06) claims; examples	1-16
X	EP 0 596 546 A (UNILEVER PLC ;UNILEVER NV (NL)) 11 May 1994 (1994-05-11) claims; examples	1-13

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA	Authorized officer
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INTERNATIONAL SEARCH REPORT

information on patent family members

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